



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/804,124	03/19/2004	Joachim Kretschmer	P25020	6398
7055 7590 09/15/2008 GREENBLUM & BERNSTEIN, P.L.C. 1950 ROLAND CLARKE PLACE RESTON, VA 20191				
EXAMINER NGUYEN, ANDREW H				
ART UNIT		PAPER NUMBER		
3746				
NOTIFICATION DATE		DELIVERY MODE		
09/15/2008		ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

gbpatent@gbpatent.com

pto@gbpatent.com

### Office Action Summary

**Application No.**

10/804,124

**Applicant(s)**

KRETSCHMER, JOACHIM

**Examiner**

ANDREW NGUYEN

**Art Unit**

3746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 August 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 20-49 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 44-49 is/are allowed.
- 6) ☒ Claim(s) 20-28, 33 and 34 is/are rejected.
- 7) ☒ Claim(s) 29-32, 35-43 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 February 2008 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

This office action is in response to the request for continued examination filed on 8/26/08.

#### *Drawings*

1. The drawings (figures 1-4) are objected to because lines, numbers and letters are not uniformly thick and well defined (poor line quality). See 37CFR 1.84 (l). Appropriate correction is required.

#### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 20-28 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 3,711,027 to Carey (Carey).

#### In reference to claim 20:

Carey teaches: *An extendible exhaust nozzle bell (Fig 1) for a rocket engine of an aircraft or spacecraft, comprising: a first part (16, Fig 1) and a second part (18, Fig 1), wherein said first part, which has a smaller diameter than said second part, is fixedly arranged on a motor of the rocket engine and said second part is arranged in a flexible manner with respect to the first part, such that, in a front stowed position, said second*

*part is located to surround said first part and, in a rear operating position, is located to continue the first part (Fig 3);*

*a closed volume (25, Fig 2) acted on by a gaseous fluid, which, when acted on by the gaseous fluid by enlargement of the volume, said first and second parts are structured and arranged to extend said second part from said front stowed position into said rear operating position (Fig 1 – 3); and*

*said closed volume being formed at least in part by a deformable rolling bellows (15, Fig 1) arrangement coupled between said second part (18, Fig 1) and a fixed part of one of the rocket engine (12, Fig 1), the aircraft, or the spacecraft.*

In reference to claim 21:

*Carey teaches: The extendible exhaust bell in accordance with claim 20, wherein, when in said front stowed position, said second part is positioned closer (Fig 1) to the rocket motor than when in said rear operating position (Fig 3).*

In reference to claim 22:

*Carey teaches: The extendible exhaust bell in accordance with claim 20, wherein said rolling bellows arrangement comprises at least one rolling bellows formed essentially in a rotationally symmetrical manner (15, Fig 1) with respect to the longitudinal axis of the rocket engine.*

In reference to claim 23:

Carey teaches: *The extendible exhaust bell in accordance with claim 22, wherein said at least one rolling bellows is formed to circulate over an entire circumference of the exhaust nozzle bell (15, Fig 1).*

In reference to claim 24:

Carey teaches: *The extendible exhaust bell in accordance with claim 20, wherein said rolling bellows arrangement comprises:*  
  
*a first rolling bellows (15, Fig 1) structured and arranged to form a seal for the gaseous fluid that is connected to one of a circumferential area of said first part or another fixed part of the aircraft or spacecraft and to a circumferential area of said second part; and a second bellows (22, Fig 2) structured and arranged to form a further seal of the volume (25, Fig 2) for the gaseous fluid limited by the said first rolling bellows.*

In reference to claim 25:

Carey teaches: *The extendible exhaust bell in accordance with claim 24, wherein said second bellows (22, Fig 2) comprises a sealing bellows that closes a jet opening of said second part and that, together with said first rolling bellows and said first and second parts, is structured and arranged to limit the closed volume (25, Fig 2) acted on by the gaseous fluid inside the exhaust nozzle bell.*

In reference to claim 26:

Carey teaches: *The extendible exhaust bell in accordance with claim 25, wherein said circumferential area of said first part to which said first rolling*

*bellows is connected is located on a rear end of said first part (16, Fig 1), and said circumferential area of said second part to which said first rolling bellows (15, Fig 1) is connected is located on a front end of said second part (18, Fig 1).*

In reference to claim 27:

Carey teaches: *The extendible exhaust bell in accordance with claim 25, wherein said sealing bellows are structured to include a preset breaking point at which said sealing bellows burst open* (Fig 3, column 3 lines 46-51).

In reference to claim 28:

Carey teaches: *The extendible exhaust bell in accordance with claim 27, wherein said preset breaking point is designed to correspond to the extension of said second part into said operating position in order to clear said jet opening* (Fig 3, column 3 lines 46-51).

**Claim Rejections - 35 USC § 103**

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 33 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 3,711,027 to Carey (Carey) as applied to claim 20 above, and further in view of US Patent 4,676,436 to Willis (Willis).

In reference to claim 33:

*The extendible exhaust bell in accordance with claim 20, further comprising a retaining device structured and arranged to brake movement during extension of said second part from said front stowed position into said rear operating position.*

Carey teaches an exhaust nozzle extension system substantially according to claim 20, but does not specify a retaining device structured and arranged to brake movement during extension of said second part from front stowed position into said rear operating position. Willis teaches a nozzle extension system that uses links (17, 18 Fig 2A) connected to the first part and second part. As the second part is extended into the operating position, the linkage system serves as a braking system to "minimize shock when the extension mates with the end of the nozzle" (column 5 lines 43-48). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the retaining device of Willis on Carey's nozzle extension system in order to minimize the shock when the extension piece is deployed, as explicitly taught by Willis.

In reference to claim 34:

*The extendible exhaust bell in accordance with claim 33, wherein said retaining device is further structured and arranged to center said second part during said extension from said front stowed position into said rear operating position*

The retaining device of Willis is arranged with equally spaced attachments around the circumference of the nozzle. This arrangement will allow the nozzle to be centered as it is being deployed. When the retaining device of Willis is added to the

system of Carey, the device will be structured and arranged to center the second part during extension.

***Allowable Subject Matter***

6. Claims 44-49 are allowed.
7. Claims 29-32 and 35-43 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
8. The following is a statement of reasons for the indication of allowable subject matter:

**In reference to claims 29-32:**

*The extendible exhaust bell in accordance with claim 24, wherein said second bellows comprises a second rolling bellows connected to a fixed part of the aircraft or spacecraft and to a circumferential area of said second part, which forms a further seal for the gaseous fluid, which lies at least in part radially outside with respect to said first rolling bellows, whereby said closed volume acted on by the gaseous fluid is located at least in part outside the exhaust nozzle bell and is limited between said first rolling bellows and said second rolling bellows.*

The closed volume located radially outside/outboard of the nozzle, which, when pressurized, causes the second part to deploy to the operation position, is not fairly described by prior art. Carey pressurizes a chamber within, not outside, the nozzle to deploy the second part. It would not have been obvious to one of ordinary skill in the art

at the time of the invention to create a chamber outside of the nozzle to deploy the second part.

In reference to claim 35:

*The extendible exhaust bell in accordance with claim 33, wherein said retaining device comprises one or more retaining cables coupled with a cable brake that extend between said second part and a fixed part of the aircraft or spacecraft.*

A retaining device comprised of one or more retaining cables coupled with a cable brake that extends between the second part and the aircraft is not fairly described by prior art. Willis teaches a nozzle deployment system that would serve as a retaining device for the second part, but does not have a cable extending from the aircraft to the second part. US Patent 3,270,504 to Ward teaches flexible columns that are attached to a second part and a fixed part of the aircraft, but he does not teach a cable brake, which would allow the second part to be deployed in a more controlled manner. A "cable brake" is interpreted by the examiner as a device which can control the release/deployment/extension of a cable. Ward's columns simply snap into rigid members when the second part is deployed.

In reference to claims 36, 38-39:

*The extendible exhaust bell in accordance with claim 33, wherein said retaining device comprises a retaining bellows that extends between a circumferential area of said first part and a circumferential area of said second part, said retaining device being arranged at a front, with respect to said first rolling bellows, and together with said first rolling bellows, forms a further closed volume to be acted on with a gaseous fluid.*

A retaining device that comprises a retaining bellows and, along with the first bellows, forms a closed volume to be acted on with a gaseous fluid, is not fairly described by prior art. Retaining devices known in the art normally comprised stiff linkage arms like those taught by Willis. It would not have been obvious to replace those with a retaining bellows as taught by applicant. Further, it was not known in the art to form a closed volume between the first bellows and retaining bellows.

In reference to claim 37:

*The extendible exhaust bell in accordance with claim 33, wherein said retaining device comprises a retaining and centering bellows that extends between a circumferential area of said first part and a circumferential area of said second part, said retaining device being arranged at a front, with respect to said first rolling bellows, and together with said first rolling bellows to form the volume, and when the volume is acted on with the gaseous fluid, and enlargement of the volume causes a braking of the movement during extension of said second part from said front stowed position into said rear operating position.*

A retaining device that comprises a retaining bellows and, along with the first bellows, forms a closed volume to be acted on with a gaseous fluid, is not fairly described by prior art. Retaining devices known in the art normally comprised stiff linkage-rod arms like those taught by Willis. It would not have been obvious to replace those with a retaining bellows as taught by applicant. Further, it was not known in the art to form a closed volume between the first bellows and retaining bellows.

In reference to claim 40, 42-43:

*The extendible exhaust bell in accordance with claim 33, wherein said retaining device comprises retaining and centering bellows extending between a front circumferential area of said first part and a front circumferential area of said second part*

A retaining and centering bellows extending between a front circumferential area of a first part and a front circumferential area of a second part is not fairly described by the prior art. Carey teaches a bellows that extends from a front circumferential area of a second part, but it extends to a rear circumferential area of a first part.

In reference to claim 41:

*The extendible exhaust bell in accordance with claim 33, wherein said retaining device comprises retaining and centering bellows extending" between a rear circumferential area of said first part and a rear circumferential area of said second part.*

A retaining mechanism comprising retaining and centering bellows is not fairly described by prior art. Retaining mechanisms such as the one described by Willis are comprised of stiff rods requiring actuators to control them. It would not have been obvious to one of ordinary skill in the art at the time of the invention to substitute flexible retaining bellows for the rods.

In reference to claims 44-49:

Prior art fails to teach the bellows exterior to the first and second parts. Prior art teaches bellows that are connected to the first and second parts at the ends, but the bellows do not lie exterior to the parts. "Exterior" is interpreted by the Examiner as "outside" or "beyond the outer surface".

### ***Response to Arguments***

9. Applicant's arguments filed 8/26/08 have been fully considered but they are not persuasive.
10. With regards to applicant's traversal of examiner's rejections of claims 20-28 under 102(b):

Applicant asserts that element 15 of Carey is not a deformable rolling bellows. However, applicant acknowledges that element 15 is "flexible so as to unroll". Examiner asserts that being flexible is equivalent to being deformable, and unrolling is equivalent to rolling. Element 15 would also reasonably be considered a bellows because it at least partially defines a boundary of the closed volume 25, just as the rolling bellows in applicant's invention partially defines a closed volume.

Applicant further asserts that Carey's element is a continuous element, Examiner notes that there is no limitation requiring the parts to be non-continuous. Carey identifies three discernable parts of the nozzle; 15, 16, and 18. The parts, including the bellows, enclose a volume 25, as shown in Figures 1-3.

Applicant further asserts that there is no arguable disclosure that element 15 forms a closed volume, which, when acted on by a gas, the first and second parts are

structured and arranged to extend the second part from a front stowed position into a rear operating position. Carey teaches a closed volume (25) that is enclosed at least by elements 16, 15, 18, and 22 (Fig 1, Fig 2). Carey teaches second part 18 extending from a front stowed position (Fig 1) to a rear operating position (Fig 3) in response to gas pressures from within the closed volume (col 3 lines 10-20).

Applicant further asserts that intermediate portion 15 is not a closed volume. It is noted that in the examiner's first office action, the closed volume was anticipated by reference numeral 25 in Carey, not 15. Element 15 defined the deformable rolling bellows in Carey, not the closed volume.

Applicant further asserts that there is no disclosure of the rolling bellows arrangement coupled between the second part and a fixed part of the rocket engine. Carey discloses his device attached to the exit port of a rocket engine (col 1 lines 26-28). The claim requires that the *arrangement* be attached to a fixed part of the rocket engine. The arrangement could reasonably be considered a combination of the bellows and the first part. Taking this interpretation, Carey's arrangement would be coupled to a fixed part of the rocket engine because his first part is coupled. In another interpretation, the first part could reasonably be considered a fixed part of the rocket engine, which would mean Carey's bellows, which is attached to the first part and the second part, is coupled to a fixed part of the engine and the second part. Furthermore, the claim requires a rolling bellows arrangement to be coupled *between* (not coupled to – the claim fails to define what the rolling bellows arrangement is coupled to) a fixed part and a second part. The rolling bellows of Carey is coupled to elements 16 and 18

and is located axially and radially between the second part and the fixed part, which anticipates the claim.

It is noted that applicant's assertion that Carey fails to anticipate every recited feature of at least claims 21-28 is unpersuasive because no arguments have been presented as to how or why Carey fails.

11. With regards to applicant's traversal of examiner's rejections of claims 33 and 34 under 103(a):

Applicant asserts that Carey and Willis fails to disclose a closed volume formed at least in part by a rolling bellows arrangement. As explained above, Carey discloses a closed volume formed at least in part by a rolling bellows arrangement. Therefore, a combination of Carey and Willis renders obvious the limitations of the claims.

Carey benefits from the addition of the braking structure of Willis because braking of the nozzle extension would reduce stresses on the bellows and other nozzle components.

In response to applicant's argument that Willis fails to disclose a closed volume for moving one portion of the nozzle relative to another portion, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANDREW NGUYEN whose telephone number is (571)270-5063. The examiner can normally be reached on 8 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Kramer can be reached on (571) 272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/William H. Rodríguez/  
Primary Examiner, Art Unit 3746

/AN/